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Preheating process in the mixed Higgs-R^2 model

We study the preheating process of the two-field inflationary model, namely the mixed Higgs-R^2 model. The characteristic potential shape leads to chaotic motion of the inflaton, which induces interesting decay channels. We numerically solve the full equations of motion to study the non-trivial behavior of the inflaton. We analyze the evolution of the background fields and find analytic approximation, which is essential to evaluate the particle production rate. We also find that the out-of-control production of longitudinal modes of gauge bosons in Higgs inflation can be cured by the presence of R^2 term such that standard reheating process can occur. More details will be presented in the talk.

Primary author: HE, Minxi

Co-authors: YOKOYAMA, Jun'ichi (The University of Tokyo); Prof. STAROBINSKY, Alexei (Landau Institute For Theoretical Physics)

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